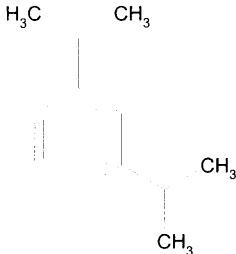
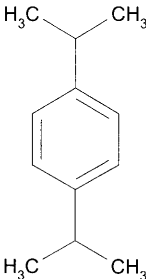


AR201-14072B

 DIVISION  
 01/11/03
**ROBUST SUMMARIES**

2002 NOV 15 AM 10:30

**I. General Information**

CAS Number:	99-62-7	100-18-5	25321-09-9
Name:	m-Diisopropylbenzene 1,3- Diisopropylbenzene Benzene, 1,3-bis(1-methylethyl)-	p-Diisopropylbenzene 1,4- Diisopropylbenzene Benzene, 1,4-bis(1-methylethyl)-	Diisopropylbenzene Benzene, bis(1-methylethyl) Benzene, diisopropyl- Bis(isopropyl)benzene
Structure:			Material is a variable composition of ortho, meta, and para isomers.

## II. Physical-Chemical Data

### A. Melting Point

<b>Test Substance</b> Test substance: Remarks:	m-Diisopropylbenzene Purity unknown
<b>Method</b> Method: GLP: Year: Remarks:	Not specified Unknown Unknown
<b>Results</b> Melting point value: Remarks:	-61 °C
<b>Conclusions</b>	
<b>Data Quality</b> Remarks:	Data obtained from Hazardous Substances Data Bank Number: 5325
<b>References</b>	Lide, D.R. (Ed.). CRC Handbook of Chemistry and Physics. 72 <sup>nd</sup> ed. Boca Raton, FL: CRC Press Inc.
<b>Other</b>	Last revision date: 19980603

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene Purity unknown
<b>Method</b> Method: GLP: Year: Remarks:	Not specified Unknown Unknown
<b>Results</b> Melting point value: Remarks:	-17.1 °C
<b>Conclusions</b>	
<b>Data Quality</b> Remarks:	Data obtained from Hazardous Substances Data Bank Number: 5331
<b>References</b>	Lide, D.R. (Ed.). CRC Handbook of Chemistry and Physics. 72 <sup>nd</sup> ed. Boca Raton, FL: CRC Press Inc.
<b>Other</b>	Last revision date: 980603

**B. Boiling Point**

<b>Test Substance</b> Test substance: Remarks:	m-Diisopropylbenzene Purity unknown
<b>Method</b> Method: GLP: Year: Remarks:	Not specified Unknown Unknown
<b>Results</b> Boiling point value: Pressure:	203.2 °C 760 mmHg
<b>Conclusions</b>	
<b>Data Quality</b> Remarks:	Data obtained from Hazardous Substances Data Bank Number: 5325
<b>References</b>	Lide, D.R. (Ed.). CRC Handbook of Chemistry and Physics. 72 <sup>nd</sup> ed. Boca Raton, FL: CRC Press Inc.
<b>Other</b>	Last revision date: 19980603

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene Purity unknown
<b>Method</b> Method: GLP: Year: Remarks:	Not specified Unknown Unknown
<b>Results</b> Boiling point value: Pressure:	210.3 °C 760 mmHg
<b>Conclusions</b>	
<b>Data Quality</b> Remarks:	Data obtained from Hazardous Substances Data Bank Number: 5331
<b>References</b>	Lide, D.R. (Ed.). CRC Handbook of Chemistry and Physics. 72 <sup>nd</sup> ed. Boca Raton, FL: CRC Press Inc.
<b>Other</b>	Last revision date: 980603

<b>Test Substance</b>	
Test substance:	Diisopropylbenzene
Remarks:	Material is a variable composition of ortho, meta, and para isomers.
<b>Method</b>	
Method:	Not specified
GLP:	Unknown
Year:	Unknown
Remarks:	
<b>Results</b>	
Boiling point value:	205 °C
Pressure:	Not noted
<b>Conclusions</b>	
<b>Data Quality</b>	
Remarks:	Data obtained from Hazardous Substances Data Bank Number: 6500
<b>References</b>	National Fire Protection Guide. Fire Protection Guide on Hazardous Materials. Tenth edition, Quincy, MA. National Fire Protection Association, 1991.
<b>Other</b>	Last revision date: 19990921

#### C. Vapor Pressure

<b>Test Substance</b>	
Test substance:	m-Diisopropylbenzene
Remarks:	Purity unknown
<b>Method</b>	
Method:	Not specified
GLP:	Unknown
Year:	Unknown
Remarks:	
<b>Results</b>	
Vapor pressure value:	1 mmHg
Temperature:	34.7 °C
Remarks:	
<b>Conclusions</b>	
<b>Data Quality</b>	
Remarks:	Data obtained from Hazardous Substances Data Bank Number: 5325
<b>References</b>	Lide, D.R. (Ed.). CRC Handbook of Chemistry and Physics. 72 <sup>nd</sup> ed. Boca Raton, FL: CRC Press Inc.
<b>Other</b>	Last revision date: 19980603

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene Purity unknown
<b>Method</b> Method: GLP: Year: Remarks:	Not specified Unknown Unknown
<b>Results</b> Vapor pressure value: Temperature: Remarks:	1 mmHg 40.0 °C
<b>Conclusions</b>	
<b>Data Quality</b> Remarks:	Data obtained from Hazardous Substances Data Bank Number: 5331
<b>References</b>	Lide, D.R. (Ed.). CRC Handbook of Chemistry and Physics. 72 <sup>nd</sup> ed. Boca Raton, FL: CRC Press Inc.
<b>Other</b>	Last revision date: 980603

<b>Test Substance</b> Test substance: Remarks:	Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.
<b>Method</b> Method: GLP: Year: Remarks:	Not specified Unknown Unknown
<b>Results</b> Vapor pressure value: Temperature: Remarks:	0.25 – 0.39 mmHg 25 °C
<b>Conclusions</b>	
<b>Data Quality</b> Remarks:	Data obtained from Hazardous Substances Data Bank Number: 6500
<b>References</b>	Lide, D.R. (Ed.). CRC Handbook of Chemistry and Physics. 72 <sup>nd</sup> ed. Boca Raton, FL: CRC Press Inc.
<b>Other</b>	Last revision date: 19990921

**D. Partition Coefficient**

<b>Test Substance</b> Test substance: Remarks:	m-Diisopropylbenzene
<b>Method</b> Method: Remarks:	Estimation
<b>Results</b> Log P <sub>OW</sub> : Remarks:	4.90
<b>Data Quality</b> Remarks:	
<b>References</b>	KOWIN v1.63; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene
<b>Method</b> Method: Remarks:	Estimation
<b>Results</b> Log P <sub>OW</sub> : Remarks:	3.45
<b>Data Quality</b> Remarks:	
<b>References</b>	KOWIN v1.63; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:  <b>Method</b> Method: Remarks:  <b>Results</b> Log P <sub>ow</sub> : Remarks:  <b>Data Quality</b> Remarks:  <b>References</b>   <b>Other</b>	Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.  Estimation   4.90   KOWIN v1.63; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210.
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#### E. Water Solubility

<b>Test Substance</b> Test substance: Remarks:  <b>Method</b> Method: GLP: Year: Remarks:  <b>Results</b> Value: Temperature:  Description: Remarks:  <b>Data Quality</b> Remarks:  <b>References</b>   <b>Other</b>	m-Diisopropylbenzene Purity was 95.2%  OECD: TG-105 Yes 1986  7.01 mg/L (7 ppm) Initial water bath on days 4-7 was 30 °C; this was followed by a one-day re-equilibration period with a temperature of 25 °C. Negligible  Study was an OECD guideline study conducted by the Chemicals Quality Services Division, at Eastman Kodak Company, Rochester, NY.  Final report: Water Solubility (Attachment 3) in Acute Aquatic Effects of m-Diisopropylbenzene on Seven Freshwater Species HAEL: 85-0077, August 19, 1986.
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<b>Test Substance</b> Test substance: Remarks:  <b>Method</b> Method: GLP: Year: Remarks:  <b>Results</b> Value: Temperature: Description: Remarks:  <b>Data Quality</b> Remarks:  <b>References</b>   <b>Other</b>	p-Diisopropylbenzene Purity was 99.6%  Other: Precipitation-Nephelometric No 1984  3.0 mg/L (3 ppm) Not noted in report Negligible  Basic Environmental Profile for: p-Diisopropylbenzene; Chemicals Quality Services Division, Eastman Kodak Company, Rochester, NY; HAEL: 82-0014, February 9, 1984.
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<b>Test Substance</b> Test substance: Remarks:  <b>Method</b> Method: Remarks:  <b>Results</b> Value: Temperature: Description: Remarks:  <b>Data Quality</b> Remarks:  <b>References</b>   <b>Other</b>	Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.  Estimation  4.325 mg/L 25 °C A log Kow of 4.91 was used in the estimation  WSKOW v1.33; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210.
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## II. Environmental Fate Endpoints

### A. Photodegradation

<b>Test Substance</b> Test substance: Remarks:	m-Diisopropylbenzene
<b>Method</b> Method: Test type: Remarks:	Estimation Atmospheric oxidation
<b>Results</b> Temperature: Hydroxyl radicals reaction OH Rate constant: Half-life: Ozone reaction: Remarks:	25 °C  15.5240 x 10 <sup>-12</sup> cm <sup>3</sup> /molecule-sec 0.689 Days (12-hr day; 1.5x10 <sup>6</sup> OH/cm <sup>3</sup> ) No ozone reaction estimation
<b>Conclusions</b>	Material readily reacts with atmospheric hydroxyl radicals.
<b>Data Quality</b> Remarks:	
<b>References</b>	AopWin v1.88; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene
<b>Method</b> Method: Test type: Remarks:	Estimation Atmospheric oxidation
<b>Results</b> Temperature: Hydroxyl radicals reaction OH Rate constant: Half-life: Ozone reaction: Remarks:	25 °C  10.1158 x 10 <sup>-12</sup> cm <sup>3</sup> /molecule-sec 1.057 Days (12-hr day; 1.5x10 <sup>6</sup> OH/cm <sup>3</sup> ) No ozone reaction estimation
<b>Conclusions</b>	Material readily reacts with atmospheric hydroxyl radicals.
<b>Data Quality</b> Remarks:	
<b>References</b>	AopWin v1.88; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:  <b>Method</b> Method: Test type: Remarks:  <b>Results</b> Temperature: Hydroxyl radicals reaction OH Rate constant: Half-life: Ozone reaction: Remarks:  <b>Conclusions</b>  <b>Data Quality</b> Remarks:  <b>References</b>  <b>Other</b>	Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.  Estimation Atmospheric oxidation  25 °C  10.1158 x 10 <sup>-12</sup> cm <sup>3</sup> /molecule-sec 1.057 Days (12-hr day; 1.5x10 <sup>6</sup> OH/cm <sup>3</sup> ) No ozone reaction estimation  Material readily reacts with atmospheric hydroxyl radicals.  AopWin v1.88; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210.
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#### B. Stability in Water

<b>Test Substance</b> Test substance: Remarks:  <b>Method</b> Method: Test type: GLP: Year: Remarks:  <b>Results</b> Degradation %: Remarks:  <b>Conclusions</b>  <b>Data Quality</b> Remarks:  <b>References</b>  <b>Other</b>	1,4-Diethylbenzene Purity unknown  OECD TG-111 Abiotic hydrolysis Yes 1993 Assessments were made at pH 4, 7, and 9.  No hydrolysis was noted at any of the three levels of pH tested.  This study was presented in the OECD SIDS dossier for this chemical.  MITI, Japan (1993)
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**C. Biodegradation**

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene Purity was 99.6%
<b>Method</b> Method: Test type: GLP: Year: Contact time: Inoculum: Remarks:	Other 21-Day biodegradation No 1984 21-Days An acclimated culture of microorganisms There was essentially no detail present in the report regarding methodology.
<b>Results</b> Degradation %: Results: Remarks:	0% No degradation was noted based on a lack of CO <sub>2</sub> evolution These results are in alignment with what was observed with another p-dialkylated-benzene (1,4-diethylbenzene). Using OECD TG 301C, there was no degradation following a 28-day incubation with activated sludge (OECD SIDS dossier on CAS No. 105-05-5; March 1994).
<b>Conclusions</b>	Material does not appear to be readily degraded by microorganisms in an aqueous environment.
<b>Data Quality</b> Remarks:	While there was essentially no information in the report relative to the methodology used. It was still assigned this high a level of reliability based on the fact that this study was carried out at a laboratory with an established history of conducting biodegradation studies and the results are similar to those reported using CAS No. 25321-09-9 (mixed isomer of diisopropylbenzene) as well as results observed using another dialkylated benzene molecule benzene (1,4-diethylbenzene).
<b>References</b>	Basic Environmental Profile For: p-Diisopropylbenzene; Environmental Sciences Section, Health and Environment Laboratories, at Eastman Kodak Company, Rochester, NY; HAEL: 82-0014, February 9, 1984.
<b>Other</b>	

<p><b>Test Substance</b></p> <p>Test substance: Remarks:</p> <p><b>Method</b></p> <p>Method: Test type: GLP: Year: Contact time: Inoculum: Remarks:</p> <p><b>Results</b></p> <p>Degradation %: Results: Remarks:</p> <p><b>Conclusions</b></p> <p><b>Data Quality</b></p> <p>Remarks:</p> <p><b>References</b></p> <p><b>Other</b></p>	<p>Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.</p> <p>Other 21-Day biodegradation No Unknown 21-Days Activated sludge There was essentially no detail present in this report regarding methodology. However it was noted that the test conditions consisted 100 mg/L of test substance, 30 mg/L suspended solid of activated sludge, 25 °C.</p> <p>BOD 2% and gas chromatography 0% Essentially no degradation was noted These results are in alignment with what was observed with another p-dialkylated-benzene (1,4-diethylbenzene). Using OECD TG 301C, there was no degradation following a 28-day incubation with activated sludge (OECD SIDS dossier on CAS No. 105-05-5; March 1994).</p> <p>Material does not appear to be readily degraded by microorganisms in an aqueous environment.</p> <p>Although there was essentially no information given about the conduct of this study at the website where the data were found, the results are identical to those observed with a pure isomer of this CAS No., p-DIPB, as well as with a structurally related dialkylbenzene, 1,4- diethylbenzene. Consequently, these results are in all likelihood accurate.</p> <p>Chemicals Evaluation and Research Institute, Japan. Internet Web Address: <a href="http://www.citi.or.jp/e_index.htm">http://www.citi.or.jp/e_index.htm</a></p>
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**D. Transport between Environmental Compartments (Fugacity)**

<b>Test Substance</b> Test substance: Remarks:	m-Diisopropylbenzene										
<b>Method</b> Test type: Model used: Remarks:	Estimation Level III Fugacity Model; EPIWIN:EQC from Syracuse Research Corporation										
<b>Results</b> Model data and results: Estimated distribution and media conc. (levels II/III)  Remarks:	<table><tr><th></th><th>Concentration (%)</th></tr><tr><td>Air</td><td>1.73</td></tr><tr><td>Water</td><td>12.2</td></tr><tr><td>Soil</td><td>80.4</td></tr><tr><td>Sediment</td><td>5.66</td></tr></table> <p>Physical chemical parameters from the EPIWIN program used to estimate distribution concentrations were: Temperature (25 °C) water solubility (4.325 mg/L), vapor pressure (0.259 mmHg), Log Kow (4.90), melting point (-16.12 °C), Henry LC (<math>2.81 \times 10^{-2}</math> atm-m<sup>3</sup>/mole), and Log Koc (3.606).</p>		Concentration (%)	Air	1.73	Water	12.2	Soil	80.4	Sediment	5.66
	Concentration (%)										
Air	1.73										
Water	12.2										
Soil	80.4										
Sediment	5.66										
<b>Conclusions</b>											
<b>Data Quality</b> Remarks:											
<b>References</b>	Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210. The Level III model incorporated into EPIWIN is a Syracuse Research Corporation adaptation of the methodology described by Mackay <i>et al.</i> 1996; <i>Environ. Toxicol. Chem.</i> 15(9), 1618-1626 and <i>Environ. Toxicol. Chem.</i> 15(9), 1627-1637.										
<b>Other</b>											

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene										
<b>Method</b> Test type: Model used: Remarks:	Estimation Level III Fugacity Model; EPIWIN:EQC from Syracuse Research Corporation										
<b>Results</b> Model data and results: Estimated distribution and media conc. (levels II/III):  Remarks:	<table data-bbox="561 527 862 684"> <thead> <tr> <th></th><th>Concentration (%)</th></tr> </thead> <tbody> <tr> <td>Air</td><td>2.39</td></tr> <tr> <td>Water</td><td>12.1</td></tr> <tr> <td>Soil</td><td>79.9</td></tr> <tr> <td>Sediment</td><td>5.62</td></tr> </tbody> </table> Physical chemical parameters from the EPIWIN program used to estimate distribution concentrations were: Temperature (25 °C) water solubility (4.325 mg/L), vapor pressure (0.259 mmHg), Log Kow (4.90), melting point (-16.12 °C), Henry LC ( $2.81 \times 10^{-2}$ atm-m <sup>3</sup> /mole), and Log Koc (3.606).		Concentration (%)	Air	2.39	Water	12.1	Soil	79.9	Sediment	5.62
	Concentration (%)										
Air	2.39										
Water	12.1										
Soil	79.9										
Sediment	5.62										
<b>Conclusions</b>											
<b>Data Quality</b> Remarks:											
<b>References</b>	Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210. The Level III model incorporated into EPIWIN is a Syracuse Research Corporation adaptation of the methodology described by Mackay <i>et al.</i> 1996; <i>Environ. Toxicol. Chem.</i> 15(9), 1618-1626 and <i>Environ. Toxicol. Chem.</i> 15(9), 1627-1637.										
<b>Other</b>											

<b>Test Substance</b> Test substance: Remarks:	Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.										
<b>Method</b> Test type: Model used: Remarks:	Estimation Level III Fugacity Model; EPIWIN:EQC from Syracuse Research Corporation										
<b>Results</b> Model data and results: Estimated distribution and media conc. (levels II/III):  Remarks:	<table data-bbox="561 527 959 684"> <thead> <tr> <th></th><th>Concentration (%)</th></tr> </thead> <tbody> <tr> <td>Air</td><td>2.39</td></tr> <tr> <td>Water</td><td>12.1</td></tr> <tr> <td>Soil</td><td>79.9</td></tr> <tr> <td>Sediment</td><td>5.62</td></tr> </tbody> </table> Physical chemical parameters from the EPIWIN program used to estimate distribution concentrations were: Temperature (25 °C) water solubility (4.325 mg/L), vapor pressure (0.259 mmHg), Log Kow (4.90), melting point (-16.12 °C), Henry LC ( $2.81 \times 10^{-2}$ atm-m <sup>3</sup> /mole), and Log Koc (3.615).		Concentration (%)	Air	2.39	Water	12.1	Soil	79.9	Sediment	5.62
	Concentration (%)										
Air	2.39										
Water	12.1										
Soil	79.9										
Sediment	5.62										
<b>Conclusions</b>											
<b>Data Quality</b> Remarks:											
<b>References</b>	Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210. The Level III model incorporated into EPIWIN is a Syracuse Research Corporation adaptation of the methodology described by Mackay <i>et al.</i> 1996; <i>Environ. Toxicol. Chem.</i> 15(9), 1618-1626 and <i>Environ. Toxicol. Chem.</i> 15(9), 1627-1637.										
<b>Other</b>											



### III. Ecotoxicity

#### A. Acute Toxicity to Fish

<b>Test Substance</b>	
Test substance:	m-Diisopropylbenzene
Remarks:	Purity was 95.2%
<b>Method</b>	
Method:	OECD: TG-203
Test type:	Static
GLP:	Yes
Year:	1986
Species/strain:	Fathead minnow ( <i>Pimephales promelas</i> )
Analytical monitoring:	Temperature, pH, and dissolved oxygen were analyzed at 0, 24, 48, 72, and 96 hours. Test material concentration was assessed at 0, 48, and 96 hours.
Exposure period:	96-Hour
Remarks:	Study was conducted in duplicate using 10 fish per tank with loading kept below 0.5 g/L. The lighting regimen consisted of 16 hours on and 8 hours off with a 20-minute transition period.
<b>Results</b>	
Nominal concentration:	50 mg/L
Measured conc.:	0.91 mg/L (Average of the two samples)
Endpoint value:	LC <sub>50</sub> > 0.91 mg/L; NOEC > 0.91 mg/L
Biological obs.:	All fish exhibited normal behavior.
Statistical methods:	NA, There were no deaths noted and only one concentration was tested.
Remarks:	No significant protocol deviations were noted that would affect study results.
	Mean hardness and total alkalinity were 131 and 93 ppm respectively. The pH ranged from 8.0-8.3, dissolved oxygen was 7.1-8.0 mg/L, and temperature was 20-21 °C. Test solution was maintained at a saturating level through a recirculating elutriation system.
<b>Conclusions</b>	Material is not toxic to fish at saturating levels.
<b>Data Quality</b>	
Reliability:	1; Reliable without restrictions
Remarks:	This was a well-documented OECD guideline study conducted under GLP assurances.
<b>References</b>	
	Acute Aquatic Effects of m-Diisopropylbenzene on Seven Freshwater Species; Environmental Sciences Section, Health and Environment Laboratories, Eastman Kodak Company, Rochester, NY; HAEL: 85-0077, August 19, 1986.
<b>Other</b>	

<p><b>Test Substance</b></p> <p>Test substance: Remarks:</p> <p><b>Method</b></p> <p>Method: Test type: GLP: Year: Species/strain: Analytical monitoring: Exposure period: Remarks:</p> <p><b>Results</b></p> <p>Nominal concentration: Measured conc.: Endpoint value: Biological obs.: Statistical methods: Remarks:</p> <p><b>Conclusions</b></p> <p><b>Data Quality</b></p> <p>Reliability: Remarks:</p> <p><b>References</b></p> <p><b>Other</b></p>	<p>p-Diisopropylbenzene Purity was 99.6%</p> <p>Other Static No 1984 Fathead minnow (<i>Pimephales promelas</i>) Not noted in report 96-Hour</p> <p>3 mg/L (Test solution was believed to be at a saturation level.) Not conducted LC<sub>50</sub> &gt;3 mg/L; NOEC &gt;3 mg/L All fish exhibited normal behavior. NA, There were no deaths noted and only one concentration was tested. No significant protocol deviations were noted that would affect study results.</p> <p>Material is not toxic to fish at saturating levels.</p> <p>2; Reliable with restrictions</p> <p>Basic Environmental Profile for: p-Diisopropylbenzene; Environmental Sciences Section, Health and Environment Laboratories, Eastman Kodak Company, Rochester, NY; HAEL: 82-0014, February 9, 1984.</p>
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**B. Acute Toxicity to Aquatic Invertebrates**

<b>Test Substance</b>	
Test substance:	m-Diisopropylbenzene
Remarks:	Purity was 95.2%
<b>Method</b>	
Method:	OECD: TG-202
Test type:	Acute immobilization
GLP:	Yes
Year:	1986
Species/strain:	<i>Daphnia magna</i>
Analytical monitoring:	Aliquots of exposure solution were submitted for concentration determinations at 0, 24, and 48 hours. Temperature, dissolved oxygen, and pH were also determined at these same time periods.
Test details:	48-hour exposure period; static
Remarks:	No protocol deviations were noted. Study was conducted in duplicate and results were averaged.
<b>Results</b>	
Nominal concentration:	1 mg/L
Measured conc.:	0.93 mg/L (Average of the two samples)
Endpoint value:	LC <sub>50</sub> >0.93 mg/L; NOEC >0.93 mg/L
Biological obs.:	The <i>Daphnia</i> exhibited behavior comparable to controls.
Statistical methods:	NA, There were no effects noted and only one concentration was tested.
Remarks:	No significant protocol deviations were noted that would affect study results.
<b>Conclusions</b>	Material is not toxic to <i>Daphnia</i> at near saturating levels.
<b>Data Quality</b>	
Reliability:	Reliable without restrictions
Remarks:	This was a well-documented OECD guideline study conducted under GLP assurances.
<b>References</b>	Acute Aquatic Effects of m-Diisopropylbenzene on Seven Freshwater Species; Environmental Sciences Section, Health and Environment Laboratories Eastman Kodak Company, Rochester, NY; HAEL: 85-0077, August 19, 1986.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene Purity was 99.6%
<b>Method</b> Method: Test type: GLP: Year: Species/strain: Analytical monitoring: Test details: Remarks:	Other Acute immobilization No 1984 Daphnia magna Not noted in report. No protocol deviations were noted.
<b>Results</b> Nominal concentration: Measured conc.: Endpoint value: Biological obs.: Statistical methods: Remarks:	3 mg/L (Test solution was believed to be at a saturation level.) Not conducted LC <sub>50</sub> >3 mg/L; NOEC >3 mg/L There was no difference between the responses seen in control or treated Daphnia. NA, There were no effects noted and only one concentration was tested. No significant protocol deviations were noted that would affect study results.
<b>Conclusions</b>	Material is not toxic to <i>Daphnia</i> at saturating levels.
<b>Data Quality</b> Reliability: Remarks:	Reliable with restrictions
<b>References</b>	Environmental Profile for: p-Diisopropylbenzene; Environmental Sciences Section, Health and Environment Laboratories, Eastman Kodak Company, Rochester, NY; HAEL: 82-0014, February 9, 1984.
<b>Other</b>	

**C. Toxicity to Aquatic Plants**

<b>Test Substance</b> Test substance: Remarks:	m-Diisopropylbenzene
<b>Method</b> Method: Test type: Remarks:	Estimation 96-hour
<b>Results</b> EC <sub>50</sub> : Remarks:	4.2 mg/L This estimated value would in all likelihood be very comparable to values obtained through actual testing. This conclusion is based on the results from studies using isopropylbenzene (cumene) and 1,4-diethylbenzene, which are structurally similar to xDIPB. Both studies were noted to have followed standard OECD TG-201 protocols and full summaries of their data should be available through the OECD SIDS program. The estimated and actual EC <sub>50</sub> vales for isopropylbenzene are 3.1 and 2.6 mg/L, respectively. The respective actual and estimated vales for 1,4-diethylbenzene are 29 and 3.5 mg/L. It is important to note that the “actual” concentration value listed for 1,4-diethylbenzene exceeded the listed water solubility value of 17 mg/L.
<b>Conclusions</b>	
<b>Data Quality</b> Reliability: Remarks:	2, Reliable with restrictions
<b>References</b>	1.) ECOSAR; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210. 2.) OECD SIDS dossiers for Cumene and 1,4-Diethylbenzene.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene
<b>Method</b> Method: Test type: Remarks:	Estimation 96-hour Green Algae EC <sub>50</sub>
<b>Results</b> EC <sub>50</sub> : Remarks:	4.2 mg/L This estimated value would in all likelihood be very comparable to values obtained through actual testing. This conclusion is based on the results from studies using isopropylbenzene (cumene) and 1,4-diethylbenzene, which are structurally similar to xDIPB. Both studies were noted to have followed standard OECD TG-201 protocols and full summaries of their data should be available through the OECD SIDS program. The estimated and actual EC <sub>50</sub> values for isopropylbenzene are 3.1 and 2.6 mg/L, respectively. The respective actual and estimated values for 1,4-diethylbenzene are 29 and 3.5 mg/L. It is important to note that the “actual” concentration value listed for 1,4-diethylbenzene exceeded the listed water solubility value of 17 mg/L.
<b>Conclusions</b>	
<b>Data Quality</b> Reliability: Remarks:	2, Reliable with restrictions
<b>References</b>	1.) ECOSAR; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210. 2.) OECD SIDS dossiers for Cumene and 1,4-Diethylbenzene.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:	Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.
<b>Method</b> Method: Test type: Remarks:	Estimation 96-hour Green Algae EC <sub>50</sub>
<b>Results</b> EC <sub>50</sub> : Remarks:	0.219 mg/L This estimated value would in all likelihood be very comparable to values obtained through actual testing. This conclusion is based on the results from studies using isopropylbenzene (cumene) and 1,4-diethylbenzene, which are structurally similar to xDIPB. Both studies were noted to have followed standard OECD TG-201 protocols and full summaries of their data should be available through the OECD SIDS program. The estimated and actual EC <sub>50</sub> vales for isopropylbenzene are 3.1 and 2.6 mg/L, respectively. The respective actual and estimated vales for 1,4-diethylbenzene are 29 and 3.5 mg/L. It is important to note that the “actual” concentration value listed for 1,4-diethylbenzene exceeded the listed water solubility value of 17 mg/L.
<b>Conclusions</b>	
<b>Data Quality</b> Reliability: Remarks:	2, Reliable with restrictions
<b>References</b>	1.) ECOSAR; Meylan, W. (1993). User's Guide for the Estimation Programs Interface (EPI), Version 1.2, Syracuse Research Corporation, Syracuse, New York 13210. 2.) OECD SIDS dossiers for Cumene and 1,4-Diethylbenzene.
<b>Other</b>	

#### IV. Toxicological Data

##### A. Acute Toxicity

<b>Test Substance</b>	
Test substance:	m-Diisopropylbenzene
Remarks:	Purity was 95.2%
<b>Method</b>	
Method:	Other
Test type:	Acute lethality; LD <sub>50</sub> estimate
GLP:	Yes
Year:	1985
Species/strain:	Rat/CRL:CD(SD)BR
Sex:	Both
Animals/sex/dose:	5/sex/dose
Vehicle:	None
Route of exposure:	Oral
Remarks:	Animals were administered the test material by oral gavage at a rate of 1250, 2500, or 5000 mg/kg. At the start of the study the males weighed 136-149 g and females were 143-160 g. They were monitored for 14 days after which they were sacrificed and grossly examined.
<b>Results</b>	
Value:	LD <sub>50</sub> = >5000 mg/kg
Deaths at each dose:	No deaths were noted at any dose.
Remarks:	No behavioral or gross pathological changes were noted. All animals gained weight.
<b>Conclusions</b>	Material is practically non-toxic
<b>Data Quality</b>	
Reliability:	1, Reliable without restrictions
Remarks:	This was a well-documented study conducted under GLP assurances.
<b>References</b>	Acute Toxicity of m-Diisopropylbenzene; 1,3-Diisopropylbenzene; Toxicological Sciences Section, Health and Environment Laboratories Eastman Kodak Company, Rochester, NY.; HAEL No.: 85-0077; December 20, 1985
<b>Other</b>	



<b>Test Substance</b> Test substance: Remarks:	p-Diisopropylbenzene Purity was 99.6%
<b>Method</b> Method: Test type: GLP: Year: Species/strain: Sex: Animals/sex/dose: Vehicle: Route of exposure: Remarks:	Other Acute lethality; LD <sub>50</sub> estimate No 1982 Rat Both 4/sex/dose None Oral Animals were fasted overnight prior to administration of the test substance. Dose levels were 1600 and 3200 mg/kg. At study start, animals weighed 170 to 226 grams. No necropsies were conducted.
<b>Results</b> Value: Deaths at each dose: Remarks:	LD <sub>50</sub> = >3200 mg/kg No deaths were noted at any dose. Immediately after dosing all animals appeared slightly weak. Slight to moderate weakness and roughened hair coats were noted at one hour, and slight weakness and rough hair coats were noted at two hours after dosing. By four hours after administration of the test substance, no abnormal clinical signs were observed in either sex at either dose level. No further abnormal clinical signs were observed at any time during the 14-day observation period. All animals gained weight during the study.
<b>Conclusions</b>	Based on the highest does administered the material would be classified as slightly toxic.
<b>Data Quality</b> Reliability: Remarks:	2; Reliable with restrictions
<b>References</b>	Basic Toxicity of p-Diisopropylbenzene; Toxicological Sciences Section, Health and Environment Laboratories Eastman Kodak Company, Rochester, NY. HAEL No.: 82-0014; April 16, 1984.
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:	Diisopropylbenzene Material is a variable composition of ortho, meta, and para isomers.
<b>Method</b> Method: Test type: GLP: Year: Species/strain: Sex: Animals/sex/dose: Vehicle: Route of exposure: Remarks:	Other Acute lethality; LD <sub>50</sub> estimate No 1976 Rat/ Sprague Dawley albino Both 5/dose None Oral Groups of 3 males and 2 females, or vice versa, for a total of 5 were administered undiluted test article at a rate of 3160, 3980, 5010, and 6310 mg/kg. Animals were monitored for 14 days, after which they were terminated and examined grossly.
<b>Results</b> Value: Deaths at each dose: Remarks:	LD <sub>50</sub> = 3900 mg/kg 3160 (0/5), 3980 (3/5), 5010 (3/5), and 6310 mg/kg (5/5) Deaths were noted between one and five days with most noted to have occurred within the first 2 days. Surviving animals exhibited reduced appetite and activity during Days 1-3. Gross examination of the animals dying before 14 days showed hemorrhagic areas in the lungs, liver discoloration, and acute gastrointestinal inflammation. Viscera of animals that survived to Day 14 were normal in appearance.
<b>Conclusions</b>	Material would be classified as slightly toxic.
<b>Data Quality</b> Reliability: Remarks:	1; Reliable without restrictions This is a well-documented study conducted prior to the inaction of GLP requirements.
<b>References</b>	Younger Laboratories Inc., St. Louis, MO Project No. Y-76-347; November 5, 1976.
<b>Other</b>	

**B. Repeated Dose Toxicity**

<b>Test Substance</b>	
Test substance:	m-Diisopropylbenzene
Remarks:	Purity was 95.2%
<b>Method</b>	
Method:	OECD: TG-407 and Annex V B.7.
Test type:	Repeated exposure
GLP:	Yes
Year:	1986
Species/strain:	Rat/CRL:COB CD(SD)BR
Route of exposure:	Oral gavage
Duration of test:	29 days
Dose levels:	100, 300, and 1000 mg/kg
Sex:	Both, 5/sex/dose
Exposure period:	21 doses
Frequency of treatment:	1x/day
Control group and treatment:	Water gavage
Post-exposure observation period:	None
Remarks:	At the start of study, 7-8 week old rats weighed approximately 223 g (males) and 187 g (females). Body weight and feed consumption were monitored on a weekly basis. Complete clinical examinations were performed once per week and cage-side examination were performed daily. Complete hematology and clinical chemistry examinations were completed at termination. The liver and kidney (previously identified as target organs) were the only organs weighed. Histology was completed on these two organs plus 27-28 additional ones. All gross lesions were excised and examined by microscope.
<b>Results</b>	
NOEL:	Not determined
LOEL:	100 mg/kg
Toxic responses by dose:	<p>100 mg/L – The only effects noted were a gastric irritation (hyperkeratosis) in the non-glandular region of one female and the formation of hyaline droplets in the renal proximal tubules of males.</p> <p>300 mg/kg – A slight increase in the relative liver weights were seen in both sexes with the change noted as significant in females. Upon microscopic examination one male was noted to have slightly enlarged hepatocytes. Evidence of gastric irritation (hyperkeratosis, edema and focal necrosis) was noted in the non-glandular region of 2/5 males and 1/5 females. Hyaline droplet formation was noted in the renal proximal tubules of males.</p> <p>1000 mg/kg – Excessive salivation was noted immediately after dosing in one female on Day 27 and in two males on the Day 27 and 28. Males showed a slight decrease in serum glucose and a slight increase in serum creatinine levels. Absolute liver weights were increased in males and relative weights were increased in both sexes. All males showed evidence of hepatocyte hypertrophy. Evidence of gastric irritation characterized by hyperkeratosis (M: 5/5, F: 4/5) and acanthosis (M: 3/5; F: 1/5) was noted in the non-glandular region. Edema was noted in the stomach of 1/5 females too. Hyaline droplet formation was noted in the renal proximal tubules of males.</p>

Statistical methods:	One-way ANOVA, Bartlett's test, and Duncan's multiple range test using a P value of <0.05 to indicate significance.
Remarks:	While a NOEL was not established due to the effects seen in stomachs, it is important to note that this effect was likely a direct irritant response and not the result of systemic toxicity. The only evidence of a systemic effect due to mDIPB was that of mild liver hypertrophy, only manifested at the mid- and high-dose levels. The absolute weight of livers in females was not affected at all and the liver weight to body weight ratios at the 300 mg/kg dose was only 3.3 and at the 1000 mg/kg dose was 3.5 verse a ratio of 3.2 in controls. This effect is often not considered an adverse effective but an adaptive induction of metabolic enzymes subsequent to a repeated exposure to high doses of a chemical. There were no increases noted in serum liver enzymes that would be more indicative of toxicity to the liver. Although the slight increases noted in male serum glucose and creatinine were statistically significant, there biological significance is minimized by the fact that these values were within historical control levels and was only seen in a single sex. The effects noted in the kidneys of males appeared to be an accumulation of hyaline droplets. This effect is unique to male rats following exposure to branched chain compounds and is not believed relevant to humans.
<b>Conclusions</b>	m-Diisopropylbenzene was well tolerated by rodents with the primary effects being an irritation of the stomach and increased liver weights.
<b>Data Quality</b>	
Reliability:	1; Reliable without restrictions
Remarks:	This was an OECD-guideline study conducted under GLP assurances.
<b>References</b>	Four-Week Oral Toxicity of m-Diisopropylbenzene in the Rat; Toxicological Sciences Section, Health and Environment Laboratories, Eastman Kodak Company, Rochester, NY; HAEL No.: 85-0077; Experiment No.: 85-0077G2; February 7, 1986
<b>Other</b>	



<b>Data Quality</b> Reliability: Remarks:	2; Reliable with restrictions
<b>References</b>	Basic Toxicity of p-Diisopropylbenzene; Toxicological Sciences Section, Health and Environment Laboratories, Eastman Kodak Company, Rochester, NY; HAEL No.: 82-0014; April 16, 1984.
<b>Other</b>	

<p><b>Test Substance</b></p> <p>Test substance: Remarks:</p> <p><b>Method</b></p> <p>Method: Test type: GLP: Year: Species/strain: Route of exposure: Duration of test: Dose levels: Sex: Control group and treatment: Post-exposure obs. period: Remarks:</p> <p><b>Results</b></p> <p>NOEL: Toxic responses by dose:</p> <p>Statistical methods: Remarks:</p> <p><b>Conclusions</b></p> <p><b>Data Quality</b></p> <p>Reliability: Remarks:</p> <p><b>References</b></p> <p><b>Other</b></p>	<p>Diisopropylbenzene Purity was noted as 99.8%. Material is a variable composition of ortho, meta, and para isomers.</p> <p>Guidelines for 28-day Repeat Dose Toxicity Testing of Chemicals (Japan) Repeated exposure Yes Unknown Rat/Crj:CD(SD) Oral gavage 29 Days 6, 30, 150, and 750 mg/kg Both, 6/sex/dose (12 animals were given 0 and 750 mg/kg)  Corn oil  14 days (control and high dose)</p> <p>30 mg/kg  6 and 30 mg/kg - No effects were noted. 150 mg/kg - Mydriasis was observed in males and females. 750 mg/kg - Mydriasis was observed in males and females. Blood chemical examinations showed a decrease in chloride in both sexes and an increase in potassium in males. While females exhibited an increase in total protein, total cholesterol and phospholipids. An increase in liver weight was noted in both sexes and kidney weights in males. Histopathological analysis revealed centrilobular hypertrophy of hepatocytes in males and females. Furthermore, the incidence of eosinophilic bodies in proximal tubules of the kidney was increased in males. Following a 14-day recovery period, there were no differences between control and treated groups.  Unknown The effects noted in the kidneys of males were likely due to an accumulation of hyaline droplets.</p> <p>Diisopropylbenzene was well tolerated by rodents with the primary effect being an increase in liver weight. Animals readily recovered following a 14-day cessation of exposure.</p> <p>2; Reliable with restrictions This summary was obtained from the referenced website and a full report was not available. The summary for this study was relatively scant and it is unknown what year it was conducted, nevertheless, this study was noted to have followed established guidelines under GLP assurances.</p> <p>Safety Assessment Laboratory, Panapharm Laboratories Co., Ltd. 1285 Kurisaki-machi, Uto-shi, Kumamoto, 869-0425, Japan Tel +81-964-23-5111 Fax +81-964-23-2282 (<a href="http://wwwwdb.mhw.go.jp/ginc/">http://wwwwdb.mhw.go.jp/ginc/</a>)</p>
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### C. Genetic Toxicity – Mutation

<b>Test Substance</b>	
Test substance: Remarks:	Diisopropylbenzene Purity was 99.8%. Material is a variable composition of ortho, meta, and para isomers.
<b>Method</b>	
Method:	OECD: TG-471 and 472
Test type:	<i>In vitro</i> mutagenicity, pre-incubation method
GLP:	Yes
Year:	Unknown
Species/strain:	<i>Salmonella typhimurium</i> /TA98, 100, 1535, 1537, and <i>E.coli</i> WP2 uvrA
Metabolic activation:	Yes; Rat liver, induced with phenobarbital and 5,6-benzoflavone
Concentration tested:	-S9 mix; 0, 0.195, 0.391, 0.781, 1.56, 3.13, 6.25 µg/plate (TA1537); 0, 0.781 - 50.0 µg/plate (TA100, TA1535, TA98 (Test 1)); 0, 0.391 - 12.5 µg/plate (TA1535 (Test 2)); 0, 0.781 - 25.0 µg/plate(TA100, TA98(Test 2)); 0, 156 - 5000 µg/plate(WP2 uvrA)
	+S9 mix; 0, 6.25 - 200 µg/plate (TA100, TA1535, TA98, TA1537); 0, 19.5 - 625 µg/plate (WP2 uvrA)
Remarks:	DMSO was used as a vehicle; Positive controls consisted of S9 mix; 2-(2-Furyl)-3-(5-nitro-2-furyl)acrylamide (TA100, TA98, WP2 uvrA), Sodium azide (TA1535) and 9-Aminoacridine (TA1537); +S9 mix; 2-Aminoanthracene (all five strains). The test article was plated in triplicate with two replicates.
<b>Results</b>	
Result:	No positive responses were induced by Diisopropylbenzene in any of the tester strains
Cytotoxic conc.:	Toxicity was observed at 6.25 µg/plate (TA1535, TA1537) and 12.5 µg/plate (TA100, TA98), 5000 µg/plate (WP2 uvrA) without an S9 mix and at 100 µg/plate (TA100, TA1535, TA98, TA1537) and 500 µg/plate (WP2 uvrA) with an S9 mix.
Precipitation conc.:	No precipitate was noted in the report.
Genotoxic effects	
With activation:	Negative
Without activation:	Negative
Statistical methods:	Unknown
Remarks:	
<b>Conclusions</b>	Material was not genotoxic under conditions of this assay.
<b>Data Quality</b>	
Reliability:	2; Reliable with restrictions
Remarks:	This summary was obtained from the below referenced website. While the summary for this study was relatively scant and it is unknown what year it was conducted, it was still noted to have followed established OECD guidelines and GLP assurances.
<b>References</b>	Hatano Research Institute, Food and Drug Safety Center, 729-5 Ochiai, Hadano-shi, Kanagawa, 257-0025, Japan. Tel +81-463-82-4751 Fax +81-463-82-9627 ( <a href="http://wwwdb.mhw.go.jp/ginc/">http://wwwdb.mhw.go.jp/ginc/</a> )
<b>Other</b>	



<b>Test Substance</b> Test substance: Remarks:	DIPB Feedstock / Cumene Tower Bottoms The purity of the material utilized in this study is unknown, as it is a complex mixture. However, historically this mixture has contained 25-40% mixed DIPB isomers.
<b>Method</b> Method: Test type: GLP: Year: Species and Cell Type: Metabolic activation: Concentration tested: Remarks:	Other CHO/HGPRT mutagenicity test Yes 1985 Chinese Hamster Ovary cells, cell line CHO-K1 Yes; Aroclor 1254-induced rat liver S9 fraction 8-50 ug/ml (-S9) and 32-150 ug/ml (+S9) The methods followed in this study are essentially identical to those used in OECD TG-476 and outlined by O'Neill and Hsie (1979). Negative controls were medium and vehicle each was +/- S9. Pluronic F127 was mixed in a 1:1 ratio (w/w) with absolute ethanol. The final concentration of F127 in the dosing preparation was 6% and 0.04% in the culture medium. Positive control chemicals were benzo(a)pyrene with S9 and ethyl methanesulfonate (each in test substance vehicle). An initial toxicity assay was performed +/-S9 activation at concentrations ranging from 8 to 5,000 ug/ml. The dosing regimen for the mutagenesis assay was designed to produce >10% survival. Sufficient cells were seeded to treatment flasks (3 per group) on Day 1 to give approximately 1 million cells on Day 2. On Day 3, all cultures were checked for evidence of cytotoxicity, and those which showed either excessive to no toxicity terminated. Cultures from 4 test substance dose groups were subcultured. Two hundred cells were added to each of four 60 mm cytotoxicity plates. These were incubated, fixed, and stained. Routinely, $10^5$ - $10^6$ cells were also seeded to a 100 mm dish on Day 3. These expression cultures were subcultured 3 times, the last on Day 10. At that time, 200 cells were seeded to each of 4 viability plates as above, and $2 \times 10^5$ cells seeded to each of 5 mutagenicity plates in selective medium. The cultures were reincubated undisturbed until Day 17 when they were fixed and stained.
<b>Results</b> Result:  Cytotoxic conc.: Genotoxic effects: With activation Without activation	Cloning efficiency at the time of mutant selection was not significantly decreased for test substance groups with activated treatment. After non-activated treatment, cloning efficiency at the time of mutant selection was slightly decreased for all test substance dose groups. However, after statistical analysis using the MUTANT program, there was neither a dose-related response nor a significant increase in the number of mutants after S9 activated or non-activated treatment with DIPB feedstock. 128 ug/ml (and higher) with S9 and 32 ug/ml (and higher) minus S9. Negative Negative

Statistical methods:	Statistical analysis was conducted using the MUTANT program. A test is considered positive if there is a significant ( $p < 0.05$ ) increase in mutant colonies at any dose level and a dose-related response. It is considered negative if neither criterion is met. If only one criterion is met, the test results are considered equivocal.
Remarks:	
<b>Conclusions</b>	Material was not genotoxic under conditions of this assay.
<b>Data Quality</b>	
Reliability:	2; Reliable with restrictions
Remarks:	Actual percentage of DIPB in test article is unknown.
<b>References</b>	Gulf Oil Products Co.; GLSC 84-2120 (Document date: 4/18/85) O'Neill, J.P. and A.W. Hsie. 1979. The CHO/HGPRT Mutation Assay: Experimental Procedures. Banbury Report 2:55-63.
<b>Other</b>	

**D. Genetic Toxicity – Chromosomal Aberrations**

<b>Test Substance</b>	
Test substance:	Diisopropylbenzene
Remarks:	Purity was 99.8%. Material is a variable composition of ortho, meta, and para isomers.
<b>Method</b>	
Method:	OECD: TG-473
Test type:	<i>In vitro</i> chromosomal aberration
GLP:	Yes
Year:	Unknown
Species/strain:	Chinese hamster lung cells
Route of exposure:	<i>In vitro</i>
Concentration tested:	-S9 mix (continuous treatment): 0, 0.0038, 0.0075, 0.015 mg/mL -S9 mix (short-term treatment): 0, 0.0019, 0.0038, 0.0075 mg/mL +S9 mix (short-term treatment): 0, 0.030, 0.060, 0.12 mg/mL
Metabolic activation:	Yes; Rat liver, induced with phenobarbital and 5,6-benzoflavone
Remarks:	Acetone was used as a vehicle; positive controls consisted of Mitomycin C (-S9 mix) and Cyclophosphamide (+S9 mix). Study was conducted in replicate.
<b>Results</b>	
Result:	No evidence of clastogenicity or polyploidy was seen under the conditions of this experiment.
Cytotoxic conc.:	None indicated
Precipitation conc.:	None indicated
Genotoxic effects	
With activation:	Negative
Without activation:	Negative
Statistical methods:	Unknown
Remarks:	
<b>Conclusions</b>	Test material was not genotoxic under conditions of this assay.
<b>Data Quality</b>	
Reliability:	2; Reliable with restrictions
Remarks:	This summary was obtained from the below referenced website. While the summary for this study was relatively scant and it is unknown what year it was conducted, it was still noted to have followed established OECD guidelines and GLP assurances.
<b>References</b>	Hatano Research Institute, Food and Drug Safety Center, 729-5 Ochiai, Hadano-shi, Kanagawa, 257-0025, Japan. Tel +81-463-82-4751 Fax +81-463-82-9627 ( <a href="http://www.db.mhw.go.jp/ginc/">http://www.db.mhw.go.jp/ginc/</a> )
<b>Other</b>	

<b>Test Substance</b> Test substance: Remarks:	DIPB Feedstock / Cumene Tower Bottoms The purity of the material utilized in this study is unknown, as it is a complex mixture. However, historically this mixture has contained 25-40% mixed DIPB isomers.
<b>Method</b> Method: Test type: GLP: Year: Species/strain: Sex: Route of exposure: Doses: Statistical methods: Remarks:	Other Mouse Micronucleus Assay Yes 1985 Swiss Mice/Crl:CD-1 (ICR) BR Both Oral 1.25, 2.5 and 5 g/kg Student's t-test for differences between treated groups and vehicle control. The methods followed in this study are essentially identical to those prescribed in OECD TG-474. Ten mice of each sex were administered doses of 0, 1.25 and 5.0 g/kg of DIPB and paraffin oil (negative control) for 2 consecutive days. Ten mice of each sex were also administered 5.0 g/kg of DIPB and paraffin oil for 1 day. Four mice of each sex were administered a single dose by ip injection of the positive control chemical, cyclophosphamide. Animals receiving a single test material and negative control dose were sacrificed on Days 2, 3 and 4; animals receiving 2 doses were sacrificed on Days 3 and 4, and animals given the positive control were sacrificed on Day 3 only. Smears of blood and bone marrow were prepared and stained for observation.
<b>Results</b> Effect on PCE/NCE ratio: Genotoxic effects: Remarks:	No significant effects were noted in this ratio. No statistically significant changes in the incidence of micronuclei in polychromatic erythrocytes were seen. No mortalities were observed in the range finding study. However, 1/10 males and 2/10 females receiving 2 doses of 5 g/kg died between Day 0 and 4.
<b>Conclusions</b>	Material was not genotoxic under conditions of this assay.
<b>Data Quality</b> Reliability: Remarks:	2; Reliable with restrictions Actual percentage of DIPB in test article is unknown.
<b>References</b>	Gulf Oil Products Co.; GLSC 84-2121 (Document date: 4/24/85)
<b>Other</b>	

**E. Genetic Toxicity – Primary DNA Damage**

<b>Test Substance</b>	
Test substance:	DIPB Feedstock / Cumene Tower Bottoms
Remarks:	The purity of the material utilized in this study is unknown, as it is a complex mixture. However, historically this mixture has contained 25-40% mixed DIPB isomers.
<b>Method</b>	
Method:	Other
Test type:	In Vitro Unscheduled DNA synthesis (UDS) in primary rat hepatocyte cultures
GLP:	Yes
Year:	1985
Species/strain:	Rat/Fischer 344
Concentration tested:	4, 8, 16, 32, 64, 128, 256 and 512 ug/ml
Control groups:	Vehicle control (Pluronic F127 Polyol); Positive control (2-Acetoaminofluorene) and negative control.
Statistical methods:	The test substance was considered positive for unscheduled DNA synthesis when the mean net nuclear grain count exceeded that of the concurrent negative control by at least 6 grains per nucleus. Fisher Exact Test and chi Square Analysis were also used to compare percentage of cells in repair between the test substance and the negative control.
Remarks:	The methods followed in this study are essentially identical to those prescribed in OECD TG-482. The F127 was diluted 1:1 by weight with absolute ethanol. This 50% solution was used to emulsify the test substance at a concentration of 22% F127 in the dosing preparation. The dosing preparation was added to 5 ml cultures in 50 ul aliquots producing a culture concentration of 0.22% F127. Primary rat hepatocytes were derived from freshly perfused rat liver (1 male, 10 weeks of age, 206 g BW). Cultures were seeded with $2 \times 10^5$ cells/ml on Day 1. Three cultures per group were exposed to $^3\text{H}$ -thymidine and test substance for 19 hours. Cells growing on cover slips were rinsed, fixed, air-dried, and glued to microscope slides on Day 2. On Day 3, the slides were dipped in autoradiographic emulsion and stored in the dark at 2-8°C. Autoradiographs were developed and stained on Day 10.
<b>Results</b>	
Result:	No increases in DNA synthesis above the negative control were noted.
Cytotoxic conc.:	DIPB Feedstock was toxic to primary hepatocytes at 64 ug/ml and higher. The positive, vehicle, and negative controls gave expected responses for unscheduled DNA synthesis.
Genotoxic effects:	Negative
Remarks:	
<b>Conclusions</b>	Material did not induce DNA synthesis under conditions of this assay.
<b>Data Quality</b>	
Reliability:	2; Reliable with restrictions
Remarks:	Actual percentage of DIPB in test article is unknown.
<b>References</b>	Gulf Oil Products Co.; GLSC 84-2122 (Document date: 2/25/85)
<b>Other</b>	

## F. Genetic Toxicity – Other (Cell Transformation)

<b>Test Substance</b>	
Test substance:	DIPB Feedstock / Cumene Tower Bottoms
Remarks:	The purity of the material utilized in this study is unknown, as it is a complex mixture. However, historically this mixture has contained 25-40% mixed DIPB isomers.
<b>Method</b>	
Method:	Other
Test type:	Cell Transformation Assay in BALB-3T3 Mouse Embryo Cells
GLP:	Yes
Year:	1984
Cell type:	Mouse embryo cells/BALB-3T3-A31-1-1
Concentration tested:	5, 25, 60, and 90 ug/ml.
Remarks:	Each treatment group consisted of 15 cultures for cell transformation and 2 cultures for colony formation. Controls cultures received 0.22% Pluronic F127 Polyol medium or 3-methylcholanthrene (1 ug/ml with 0.22% Pluronic F127 Polyol). The F127 was diluted 1:1 by weight with absolute ethanol. This 50% solution was used to emulsify the test substance at a concentration of 22% F127 in the dosing preparation. The dosing preparation was added to 5 ml cultures in 50 ul aliquots producing a culture concentration of 0.22% F127. Transformation cultures were seeded with approximately $1 \times 10^4$ cells and colony formation cultures with approximately 100 cells on Day 1. The cultures were exposed to the test substance for 2 days, beginning on Day 2. The medium was changed on all cultures on Day 4. Colony formation cultures were fixed and stained for colony counting on Day 10. The medium was changed weekly on all transformation cultures. Fixation and staining of transformation cultures for focus counting and evaluation were on Day 29. Colonies (at least 50 cells) in culture vessels were counted visually and, where required, examined microscopically. Foci in transformation cultures were counted visually and examined microscopically. The colony forming efficiency for each group and the relative colony forming efficiency were calculated.
<b>Results</b>	
Result:	No increases in cell transformations were noted in DIPB feedstock exposed cells. Expected responses were seen in all control groups.
Cytotoxic conc.:	Viability was 72% at 8 ug/ml, 35% at 64 ug/ml, 6% at 128 ug/ml, and 0% at higher concentrations.
Criteria for a	
Positive/Negative Test:	A test is considered positive if there were 1.) A two-fold increase in Type-III foci at the highest dose above that seen in negative control cultures, with or without a dose-related response, or 2.) A two-fold increase at two or more consecutive dose levels. Where negative control cultures have no Type-III foci, at least 2 foci would be needed for a dose level to be considered positive. A test is considered equivocal if a two-fold increase occurred at any one level other than the highest acceptable dose. A test is negative if none of the above applies.
Remarks:	While included under genetic toxicity this assay does not technically assess the affect of chemicals to damage chromosomes.

<b>Conclusions</b>	Test material did not induce increases in the number of transformed cells under conditions of this assay.
<b>Data Quality</b> Reliability: Remarks:	2; Reliable with restrictions Actual percentage of DIPB in test article is unknown.
<b>References</b>	Gulf Oil Products Co.; GLSC 84-2123 (Document date: 1/23/85)
<b>Other</b>	

#### **G. Developmental Toxicity and Reproductive Toxicity**

Narrative summaries of the several studies used to satisfy this endpoint can be found in Attachment I, entitled "The Use of Various Mono- and Di-Alkylbenzene Surrogates for the HPV Candidate Diisopropylbenzene Chemicals in SIDS Reproductive/Developmental Toxicity Testing" by Mr. James Schardein. In addition, summaries will be available in various other public documents that are in various stages of completion. These include the OECD SIDS dossiers for Cumene (isopropylbenzene), ethylbenzene, and 1,4-diethylbenzene, as well as the summaries being prepared for the mixed isomers of diethylbenzene (CAS# 25340-17-4) through the ICCA HPV program.